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09/702,185	10/30/2000	Shirley Lee	10982031-1	1662

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FORT COLLINS, CO 80527-2400

EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 02/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/702,185

Applicant(s)

LEE ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 and 34-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) 1-49 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 6) ☐ Other:

**DETAILED ACTION**

**Election/Restrictions**

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-16, drawn to ink jet printing apparatus, classified in class 347, subclass 98.
  - II. Claims 17-33, drawn to ink jet ink/underprinting fixer fluid, classified in class 523, subclass 160.
  - III. Claims 34-49, drawn to method of ink jet printing, classified in class 524, subclass 548.

2. The inventions are distinct, each from the other because:

(a) Inventions III and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process such as printing ink first then fixer fluid or printing several different color inks with no printing of fixer fluid.

(b) Inventions II and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the

product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process as claimed can be practiced with another materially different product such as underprinting fixer fluid comprising at least one anionic component and ink composition comprising at least one cationic component or two ink compositions, i.e. no fixer fluid.

(c) Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions and effects. The invention of group II is drawn to an ink jet ink/underprinting fixer fluid compositions while the invention of group I is drawn to an ink jet printing apparatus which uses the ink/fixer fluid and thus, the inventions are not related as apparatus and product made. The inventions have different functions because the ink/fixer fluid are compositions used as coatings to produce fixed printed image on a substrate, while the apparatus is a device used to store and then eject ink. The inventions have different effects because the effect of the ink/fixer fluid is to produce a visible and/or readable image on a substrate, while the effect of the apparatus is to transfer the ink from the printer to the substrate.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and/or recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Michael Jones on 2/7/02 a provisional election was made with traverse to prosecute the invention of Group II, claims 17-33. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-16 and 34-49 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### **Claim Objections**

6. Claim 17 is objected to because of the following informalities:

There is a period at the end of line 6 of the claim. However, as required under MPEP 608.01(m), except for abbreviations, periods may not be used elsewhere in a claim except at the end of a claim. It is advised that the period at the end of line 6 is deleted. Appropriate correction is required.

#### **Claim Rejections - 35 USC § 112**

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 17-26 and 28-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) The scope of claim 17 is confusing given that both lines 3-6 and lines 7-9 disclose that when the ink composition is printed on a medium over an underprinted fixer fluid, the printed ink and the fixer fluid together form an amorphous viscous fluid having a viscosity greater than the ink composition. What, if any, is the difference between the requirements of lines 3-6 and lines 7-9? Clarification is requested.

(b) Claim 19 recites "wherein the at least one anionic binder comprises polymers..." The scope of the claim is confusing because it is not clear if the anionic binder present must always comprise more than one polymer, i.e. polymers, as suggested by the claim. It is not clear how if there is only one anionic binder present, i.e. "at least one", the binder comprises "polymers".

Similar questions arise with respect to claim 21, which depends on claim 19 and recites "wherein the polymers comprise styrene". The scope of the claim is confusing for the reasons discussed above and further, it is not clear that if more than one polymer is present, must all the polymers comprise styrene?

Clarification is requested.

(c) Claim 28 recites "wherein the at least one cationic component comprises cationic polymers". The scope of the claim is confusing because it is not clear if the cationic component present must always comprise more than one cationic polymer, i.e. polymers, as suggested by the

claim. It is not clear how if there is only one cationic component present, i.e. "at least one", the component comprises "polymers".

Similar questions arise with respect to claims 29, 31, and 32 which each depends on claim 28, and each recites "cationic polymers".

Clarification is requested.

**Claim Rejections - 35 USC § 102**

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

10. Claims 17, 23-29, and 32 rejected under 35 U.S.C. 102(e) as being anticipated by Ono et al. (U.S. 6,299,675).

Ono et al. disclose an ink composition comprising anionic dye that is printed on a medium over an underprinted fixer fluid, i.e. liquid composition, comprising cationic compound. The anionic dye includes those with carboxylate groups. The cationic compounds include quaternary ammonium salt type compounds. It is further disclosed that the ink also contains low molecular weight hydrophilic compounds including lower alcohols (col.7, line 63-col.8, line 1, col.9, line 35, col.10, lines 50-52, col.11, lines 41-50, and col.14, lines 55-57).

Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Ono et al. disclose ink and fixer fluid identical to that presently claimed including anionic dye and cationic component which will react or associate with each other, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Ono et al. anticipates the present claims.

11. Claims 17, 23-29, and 32 rejected under 35 U.S.C. 102(b) as being anticipated by Kurabayashi et al. (U.S. 5,700,314).

Kurabayashi et al. disclose an ink composition comprising anionic dye that is printed on a medium over an underprinted fixer fluid, i.e. liquid composition, comprising cationic compound. The anionic dye includes those with sulfonated or carboxylate groups. The cationic compounds include quaternary ammonium salt type compounds. It is further disclosed that the ink also contains low molecular weight hydrophilic compounds including lower alcohols (col.5, lines 9-26 and 33-34, col.7, lines 30-45, col.8, lines 47-49, col.9, lines 59-64).



Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Kurabayashi et al. disclose ink and fixer fluid identical to that presently claimed including anionic dye and cationic component which will react or associate with each other, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Kurabayashi et al. anticipates the present claims.

12. Claims 17, 23-29, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al. (U.S. 5,624,484).

Takahashi et al. disclose an ink composition comprising anionic dye that is printed on a medium over an underprinted fixer fluid, i.e. liquid composition, comprising cationic compound. The anionic dye includes those with carboxylate groups. The cationic compounds quaternary ammonium salt type compounds. It is further discloses that the ink also contains low molecular weight hydrophilic compounds including lower alcohols (col.3, lines 62-67, col.5, line 67, col.8, lines 21-28 and 44-45, and col.11, lines 55-65).

Col.4, lines 19-25 of Takahashi et al. disclose that upon reaction between the anionic dye in the ink and the cationic component in the fixer fluid, the viscosity increases. Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Takahashi et al. disclose ink and fixer fluid identical to that presently claimed, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Takahashi et al. anticipates the present claims.

13. Claims 17-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Kabalnov (U.S. 6,261,350) taken in view of the evidence given in Prasad (U.S. 5,196,056).

Kabalnov discloses an ink composition comprising anionic dye and anionic binder such as hydrolyzed styrene-maleic anhydride that is printed on a medium over an underprinted fixer fluid comprising cationic compound. The anionic dye includes Acid Blue 9 and Acid Blue 185 which are well known, as found in Prasad, to include sulfonated functional groups (col.4, lines 17-19). The cationic compounds include polyethyleneimine which is intrinsically branched as well as quaternary ammonium type salts. It is further disclosed that the ink also contains low molecular weight hydrophilic compounds including salt such as sodium hydroxide while the fixer fluid comprises polyvalent metal salts which provides cations such as calcium, aluminum, barium, and magnesium (col.3, lines 39-41 and 66, col.5, lines 56-59, col.10, lines 1-3, col.11, lines 25, 31-32, and 35-36, col.12, lines 17-32, 41-46, and 50-58).

Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Kabalnov disclose ink and fixer fluid identical to that presently claimed including anionic dye and cationic polymer which will react or associate with each other, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Kabalnov anticipates the present claims.

**Claim Rejections - 35 USC § 103**

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (U.S. 6,299,675), Kurabayashi et al. (U.S. 5,700,314), or Takahashi et al. (U.S. 5,624,484) either of which in view of either Zhu (U.S. 5,889,083) or EP 735120.

The disclosures with respect to Ono et al., Kurabayashi et al., and Takahashi et al. in paragraphs 10, 11, and 12, respectively, are incorporated here by reference.

The difference between Ono et al., Kurabayashi et al., or Takahashi et al. and the present claimed invention is the requirement in the claims of anionic binder.

Zhu, which is drawn to ink jet inks, disclose the use of hydrolyzed styrene-maleic anhydride binder in order to fix the colorant to substrate as well as to impart abrasion resistance to the ink (col.4, lines 47-54 and col.6, lines 5-9).

Alternatively, EP 735120, which is drawn to ink jet inks, disclose the use of hydrolyzed styrene-maleic anhydride binder in order to provide good adhesion of the ink to substrate (page 2, lines 47-49 and 49-53 and page 3, lines 24-28).

In light of the motivation for using hydrolyzed styrene-maleic anhydride binder disclosed by either Zhu or EP 735120 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such binder in the ink of either Ono et al., Kurabayashi et al., or Takahashi et al. in order to produce an ink which has good adhesion of colorant to substrate and abrasion resistance, or alternatively, good adhesion of ink to substrate, and thereby arrive at the claimed invention.

17. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (U.S. 6,299,675), Kurabayashi et al. (U.S. 5,700,314), or Takahashi et al. (U.S. 5,624,484) any of which in view of Yatake (U.S. 6,004,389).

The disclosures with respect to Ono et al., Kurabayashi et al., and Takahashi et al. in paragraphs 10, 11, and 12, respectively, are incorporated here by reference.

The difference between Ono et al., Kurabayashi et al., or Takahashi et al. and the present claimed invention is the requirement in the claims of cationic polymer which comprises branched polymer chains.

Yatake et al., which is drawn to ink jet ink composition and fixer fluid, disclose the use of polyethyleneimine, an intrinsically branched cationic polymer, in the fixer fluid composition wherein the polyethyleneimine reacts with the colorant in the ink composition in order to prevent bleed of the ink (col.1, line 13 and col.16, lines 40-43 and 48). Additionally, Yatake et al. disclose the equivalence and interchangeability of polyallylamine, as disclosed by either Ono et al. (col.9, lines 17-18), Kurabayashi et al. (col.6, line 22), or Takahashi et al. (col.4, line 22) with polyethyleneimine as the cationic compound in the fixer fluid.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use cationic polymer which comprises branched polymer chains, i.e. polyethyleneimine, in the fixer fluid of either Ono et al., Kurabayashi et al., or Takahashi et al. in order to produce a fixer fluid which prevents ink bleed, and thereby arrive at the claimed invention.

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18. Claims 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurabayashi et al. (U.S. 5,700,314) or Takahashi et al. (U.S. 5,624,484) either of which in view of Watanabe et al. (U.S. 6,080,229)

The disclosures with respect to Kurabayashi et al. and Takahashi et al. in paragraphs 11 and 12, respectively, are incorporated here by reference.

The difference between either Kurabayashi et al. or Takahashi et al. and the present claimed invention is the requirement in the claims of cations.

Watanabe et al., which is drawn to ink jet ink and fixer fluid, disclose the use of polyvalent metal salt which provides cations such as calcium, aluminum, barium, and magnesium to the fixer fluid as presently claimed (col.3, lines 36-46) wherein the motivation for using such salts is that the salts react with the colorant present in the ink in order to prevent bleeding and produce an image with high color density and free from feathering (col.2, line 57- col.3, line 5).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use polyvalent metals salts in the fixer fluid of either Kurabayashi et al. or Takahashi et al. in order to produce fixer fluids which prevent bleeding and produce an image with high color density and free from feathering, and thereby arrive at the claimed invention.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Iijima (U.S. 6,106,598) disclose an ink set for ink jet printing which comprises underprinted fixer fluid and ink wherein the viscosity of a mixture of fixer fluid and ink is

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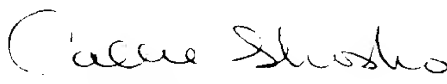
greater than the viscosity of the ink, however, there is no disclosure that the fixer fluid comprises cationic compound as presently claimed.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho  
Examiner  
Art Unit 1714

  
Callie Shosho  
February 11, 2002